from plants in coarse than in fine soils; and that a "bog xerophyte," *Scirpus lacustris*, loses about twice as much water as *Helianthus annuus*, on account of its loose structure, the air spaces being estimated at 80 per cent. of the total volume and the internal surface as 15 times the external.—C. R. B.

Anthocyan.—On the vexed question of the formation of anthocyan, COMBES furnishes[12] first a very clear and compact summary of the previous researches. He then demonstrated that the close relations between the accumulation of carbohydrates and the formation of anthocyan, pointed out by the researches of OVERTON and MOLLIARD on artificially nourished plants, exist also in nature, however the pigmentation is provoked. The insoluble carbohydrates behave differently, according to the occasion of the pigmentation; but the sugars, glucosides, and dextrins behave alike in all cases, the two former varying in amount directly as the anthocyan, the dextrins diminishing as the sugars and glucosides increase. The insoluble carbohydrates, consequently, appear not to share directly in the formation of the red pigment. COMBES concludes that the anthocyans, which are probably cyclic glucosides, are formed at the expense of neither preexistent sugars and glucosides nor chromogens, but arise at the same time as other glucosides, as part of the general accumulation of such bodies.—C. R. B.

Chlorophyll bodies.—Morphological distinctions between chlorophyll bodies, found in a great number and variety of plants, have been pointed out by D'ARBAUMONT,[13] who divides them into two categories, chloroplasts and pseudochloroplasts. The former, held to be morphologically superior, seem to include the bodies usually recognized under that name, without admixture of the latter, from which they are distinguished by not swelling in water (at least *in situ*), and by not being stained, with rare exceptions, by acid aniline blue. The pseudochloroplasts, on the contrary, usually swell in water and become vividly colored in the stain. They are of four types, all small, more or less varied in shape, with different degrees of green coloration, and variously intermixed. The members of the two categories are formed in the same way, either with or without the cooperation of starch,[14] and both, without reference to their mode of origin, may or may not form starch.—C. R. B.

Morphology of Symplocarpus.—In an investigation of *Symplocarpus foetidus*, ROSENDAHL[15] has obtained the following results: the primordia of the flowers

[12] COMBES, R., Rapports entre les composés hydrocarbones et la formation de l'anthocyane. Ann. Sci. Nat. Bot. IX. **9**: 275–303. 1909.

[13] D'ARBAUMONT, J., Nouvelle contribution a l'étude des corps chlorophylliens. Ann. Sci. Nat. Bot. IX. **9**: 197–229. 1909.

[14] *Cf.* BELZUNG, E., Nouvelles recherches sur l'origine des grains d'amidon et des grains de chlorophylle. Ann. Sci. Nat. Bot. VII. **13**: 17. 1891; Jour. de Bot. **9**: 67, 102. 1895.

[15] ROSENDAHL, C. OTTO, Embryo sac development and embryology of *Symplocarpus foetidus*. Minn. Bot. Studies **4**¹: 1–9. *pls.* 1–3. 1909.